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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/761,258

01/22/2004

Yuko Yoshida

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

WARTALOWICZ, PAUL A

ART UNIT

PAPER NUMBER

1754

DATE MAILED: 06/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/761,258

Applicant(s)

YOSHIDA ET AL.

Examiner

Paul A. Wartalowicz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/26/04, 6/30/04, 6/14/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 5-21 are rejected under 35 U.S.C. 102(a) as being anticipated by Sakatani et al. (J.P. 2001-349770 (EP 1279643 will be referred to in the citations throughout)).

Sakatani et al. teach a process for producing titanium dioxide (page 5, lines 20-25) wherein a titanium compound such as a titanium tetrachloride, titanium trichloride, titanium sulfate, titanium oxysulfate, and titanium oxychloride is reacted with a base such as sodium hydroxide, potassium hydroxide, ammonia, hydroxylamine (page 5, lines 22-28), or urea (page 8, lines 1-4) in a dispersion medium such as ethanol, methanol, or acetone (page 6, lines 12-16) at a temperature of 75°C to 80°C (page 7, lines 40-45) and then calcining the product at a temperature of from 300°C to 500°C (page 5, lines 32-35) and wherein water is present in the reaction (page 6, lines 17-20).

As to the limitation wherein maintaining the heating temperature or further heating the composition so that the base precursor decomposes into said base, to react the titanium compound with said base, Sakatani et al. teach wherein urea is added into the reaction (page 8, line 2) at a temperature of from 75°C to 80°C (page 7, lines 40-45)

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such that Sakatani et al. inherently teaches that the base precursor (urea) decomposes into said base.

Claims 1, 2, 4, and 6-21 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2001-278625 (Sawabe et al.; citations refer to the machine translation provided throughout).

Sawabe et al. teach a process for making titanium oxide (paragraph 0001) wherein a titanium compound such as tetrastearoxy titanium, diisopropoxybis (acetylacetonate) titanium, titanium tetrachloride (paragraph 008, lines 4-10) are mixed with an aqueous ammonia or urea in the presence of steam (steam being present in the reaction meets the limitation wherein a solvent is present in the solution, the solvent being water as steam, paragraph 0011) wherein the mixture is heated to a temperature of from above 50°C (paragraph 0010, lines 1-5) wherein the ammonia is added to the titanium oxide-precursor in such a ratio of 18:1 by weight (ratio meets the limitation wherein the base is used in at least a molar amount needed to theoretically convert the titanium compound to a titanium hydroxide, paragraph 0016, lines 6-10) and then calcining at a temperature of 350°C to 600°C (paragraph 0012, lines 1-5).

As to the limitation wherein maintaining a heating temperature or further heating the composition so that the base precursor decomposes into said base, to react the titanium compound with said base, Sawabe et al. teach wherein the heat treatment can last an hour or more (paragraph 0010, lines 2-5) such that the urea would inherently be decomposed into said base.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakatani et al. (J.P. 2001-349770) in view of Sawabe et al. (U.S. 20020012628).

Sakatani et al. teach a process for producing titanium oxide as described above in claim 1. Sakatani et al. fail to teach wherein the titanium compound is a titanium tetra-alkoxide or a titanium chelate.

Sawabe et al. teaches a process for producing titanium oxide (paragraph 0004, lines 1-5) whereby it is known to use organic titanium compounds such as tetra-isopropoxy titanate and di-isopropoxy-bis(acetylacetonato) titanium complex in the production of titanium oxide (paragraph 0009, lines 8-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to use organic titanium compounds such as tetra-

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isopropoxy titanate and di-isopropoxy-bis(acetylacetonato) titanium complex (paragraph 0009, lines 8-16) in Sakatani et al. in order to carry out the well-known process of producing titanium oxide with an effective starting material for that process as taught by Sawabe et al.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakatani et al. (J.P. 2001-349770) in view of Oki et al. (U.S. 6399540).

Sakatani et al. teach a process for producing titanium oxide as described above in claim 1. Sakatani et al. fail to teach wherein the titanium compound is a titanium tetra-alkoxide.

Oki et al. teaches a process for producing titania (col. 1, lines 5-7) whereby it is known to use organic titanium compounds such as titanium tetra-isopropoxide, titanium tetra-n-butoxide, titanium tetra-sec-butoxide, and titanium tetra-n-propoxide in the production of titanium oxide (col. 4, lines 5-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to use titanium compounds such as titanium tetra-isopropoxide, titanium tetra-n-butoxide, titanium tetra-sec-butoxide, and titanium tetra-n-propoxide (col. 4, lines 5-17) in Sakatani et al. in order to carry out the well-known process of producing titanium oxide with an effective starting material for that process as taught by Oki et al.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-278625 (Sawabe et al.) in view of Oki et al. (U.S. 6399540).

JP 2001-278625 teaches a process for producing titanium oxide as described above in claim 1. JP 2001-278625 fails to teach wherein the titanium compound is a titanium tetra-alkoxide.

Oki et al. teaches a process for producing titania (col. 1, lines 5-7) whereby it is known to use organic titanium compounds such as titanium tetra-isopropoxide, titanium tetra-n-butoxide, titanium tetra-sec-butoxide, and titanium tetra-n-propoxide in the production of titanium oxide (col. 4, lines 5-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to use titanium compounds such as titanium tetra-isopropoxide, titanium tetra-n-butoxide, titanium tetra-sec-butoxide, and titanium tetra-n-propoxide (col. 4, lines 5-17) in JP 2001-278625 in order to carry out the well-known process of producing titanium oxide with an effective starting material for that process as taught by Oki et al.

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-278625 (Sawabe et al.) in view of Sawabe et al. (U.S. 20020012628).

JP 2001-278625 teaches a process for producing titanium oxide as described above in claim 1. JP 2001-278625 fails to teach wherein the titanium compound is a titanium tetra-alkoxide or a titanium chelate.

U.S. 20020012628 teaches a process for producing titanium oxide (paragraph 0004, lines 1-5) whereby it is known to use titanium compounds such as tetra-isopropoxy titanate, di-isopropoxy-bis(acetylacetonato) titanium complex, or titanium oxysulfate in the production of titanium oxide (paragraph 0009, lines 8-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to use organic titanium compounds such as tetra-isopropoxy titanate and di-isopropoxy-bis(acetylacetonato) titanium complex (col. 2, lines 16-23) in JP 2001-278625 in order to carry out the well-known process of producing titanium oxide with an effective starting material for that process as taught by U.S. 20020012628.

Conclusion

JP 2001-072419 teaches a process for making titanium oxide from titanium compounds such as titanium tetrachloride in the presence of water with a base such as ammonia or urea and then calcining.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul Wartalowicz
May 25, 2006



COLLEEN P. COOKE
PRIMARY EXAMINER